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APPLICATION NO.	FILING DATE *	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,462	03/05/2004	Wen-Sheng Hou	SISP0007USA	2461

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NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION
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EXAMINER	
HUANG, DAVID S	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
01/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/708,462	HOU, WEN-SHENG	
	Examiner	Art Unit	
	David Huang	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to the specification have been fully considered and are persuasive. The objection to the specification (equation on page 5) has been withdrawn.

2. Applicant's arguments with respect to claims 1 and 3 have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited references reasonably and properly meet the claimed limitation as rejected.

(1) Applicant's argument: "The '289 patent... can only estimate the fractional part and must be the same polarity signal… The inventive step disclosed and claimed in the present application is that a single procedure can be performed which will calculate the total carrier frequency offset" and "the present claims can estimate the total frequency offset (not only the fractional part) for same polarity signal and non-polarity signals."

Examiner's response: In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "single procedure," "total carrier frequency offset," and (non-)polarity signals) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The claims merely require "estimating the carrier frequency offset" which can be reasonably interpreted as a fractional frequency offset, which is taught by the prior art.

(2) Applicant's argument: "Both references distinctly point out their respective two procedure steps, one for the fraction part and one for the integer part of the carrier frequency

offset, with difference procedures utilizing different methods. However, there is no teaching, suggestion, nor motivation in the references that would lead one skilled in the art to the claimed invention. The simple application of the claimed signal procedure to calculate total carrier frequency carrier offset is novel and useful."

Examiners response: In addition to relying on the unclaimed "total carrier frequency offset" and "single procedure" as discussed with respect to item (1) above, applicant asserts that a bona fide case of Prima Facie obviousness has not been presented.

Patent '361 discloses the a matched filter for generating "effective output" 601, the peak produced in the amplitude output of the matched filter, and also discloses fractional part of carrier frequency offset is estimated by using the phase angle difference of the matched filter output 604 (column 8, lines 36-47, Figure 6).

Patent '289 discloses in Figure 4, delay circuit 102 applies a predetermined delay to the input signal. Coupled to the delay circuit 102 is arithmetic circuit 104 to provide a complex conjugate of the delayed input signal. Multiplier 106, coupled to arithmetic circuit 104 multiplies the input signal with the complex conjugate of the input signal from the arithmetic circuit 104. An output z(t) from multiplier 106 can then be used to find the fractional carrier frequency offset using a given equations (column 5, lines 2-37).

Because both Patents '361 and '289 teach methods for calculating the fractional carrier frequency offset, it would have been obvious to one of ordinary skill in the art to substitute one method for the other to achieve the predictable result of determining the fractional carrier offset. Furthermore, both references address the same issue, estimating and correcting for carrier frequency offsets in wireless systems, and have a common inventor.

(3) Applicant's argument: Regarding claim 3, "The total frequency offset is estimated by main-cursor by peak-detection. A sign of the real part of the conjugate is multiplied with the output to find 180 degree rotation for a non-polarity signal. This technique is different from the '361 patent."

Examiner's response: In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "total carrier frequency offset," "180 degree rotation," and "non-polarity signal") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US Patent 6,266,361 hereinafter '361) in view of Huang et al. (US Patent 5,991,289 hereinafter '289).

Regarding **claim 1**, patent '361 discloses a method of estimating carrier frequency offset in a constant-period, preambled wireless communications system, the method comprising:

determining a main-cursor signal corresponding to a main-cursor path from a matched code output (column 9, lines 55-57); and

estimating the carrier frequency offset according to a predefined formula utilizing the phase angle difference of the matched filter output (column 8, lines 36-47, Figure 6; and column 7, lines 1-25).

Patent '361 fails to expressly disclose the step of multiplying the main-cursor signal by a delayed conjugated version of the main-cursor signal to obtain a first result.

Patent '289 discloses in Figure 4, delay circuit 102 applies a predetermined delay to the input signal. Coupled to the delay circuit 102 is arithmetic circuit 104 to provide a complex conjugate of the delayed input signal. Multiplier 106, coupled to arithmetic circuit 104 multiplies the input signal with the complex conjugate of the input signal from the arithmetic circuit 104. An output z(t) from multiplier 106 can then be used to find the fractional carrier frequency offset using a given equations (column 5, lines 2-37).

Because both Patents '361 and '289 teach methods for calculating the fractional carrier frequency offset, it would have been obvious to one of ordinary skill in the art to substitute one method for the other to achieve the predictable result of determining the fractional carrier offset. Furthermore, both references address the same issue, estimating and correcting for carrier frequency offsets in wireless systems, and have a common inventor.

Regarding **claim 2**, '361 discloses everything claimed as applied above (see *claim 1*), and further discloses wherein the main-cursor signal is determined using peak-detection (column 8, lines 36-42).

Regarding **claim 3**, '361 discloses everything claimed as applied above (see *claim 1*), and further discloses wherein the predefined formula includes multiplying a phase of the first result (phase angle difference, column 7, lines 25-32) by the sign of a real part of the first result

(direction flag is determined based on comparing the maximum (amplitude) outputs of a matched filter applying a pilot spreading code to a received signal; the output with the largest amplitude is compared with matched results immediately before and after to determine the phase offset direction, column 5, lines 25-45, and column 6, 37 lines 37-52; in the correction of fractional part of carrier frequency the direction flag is used to decide the calculation way of the phase angle difference; direction flag of –1 is a phase shift between 0 and –360 degrees (negative), and a flag of 1 is a phase shift between 0 and 360 degrees (positive)).

Regarding **claim 4**, '361 discloses everything claimed as applied above (see *claim 3*), and further discloses wherein the main-cursor signal is a BPSK signal (column 8, lines 31-32).

Regarding **claim 5**, '361 discloses everything claimed as applied above (see *claim 1*), and further discloses wherein the communications system is a DSSS wireless communications system (column 2, lines 45-48).

5. **Claims 6-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US Patent 6,266,361 hereinafter '361) in view of Huang et al. (US Patent 5,991,289 hereinafter '289) and further in view of Powel, II et al. (US Patent 6,130,921) and Chung et al. (US Patent 6,005,889).

Regarding **claim 6**, patents '361 and '289 teach the functionality of the program code as applied to the corresponding method *claim 1*, implemented as an integrated circuit to achieve a small and compact design.

However, the combination of '361 and '289 fails to expressly disclose a transceiver for wirelessly communicating with another communications device within the communications system; and

control circuitry connected to the transceiver, the control circuitry comprising a CPU and a memory, the memory comprising program code

Chung et al. discloses the front end of a mobile phone receiver for detecting a carrier frequency offset in a received PN-modulated signal in a network using DSSS signals (column 3, lines 32-35). The device for implementation of the method of detection and estimation of carrier frequency offset can be implemented with hardware components which are already present within the mobile phone's architecture, allowing implementation to be attained at minimal cost (column 8, lines 6-10). Chung et al. also disclose operations of interest for frequency offset detection and estimation occur within DSP 230 and searcher 217 which is controlled by DSP 230 (column 5, lines 39-44, Figure 2). DSP 230 also has a memory (column 7, line 7, Figure 2).

However, references '361, '289, and Chung et al. fail to expressly disclose the control circuitry connected to the mobile phone comprises a CPU and a memory comprising program code.

Powell, II et al. teaches automatic frequency correction circuit with a controller circuit with DSP 815 comprising a CPU 818 and a ROM 816 that stores program instruction that control the CPU 818 (column 7, lines 1-5, Figure 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide patent '361 with the teaching of '289 since patent '361 teaches using the phase difference information to estimate carrier frequency offsets (column 8, lines 45-47, Figure 6) and patent '289 teaches a method of how to obtain that phase difference information (column 3, lines 13-20). Both references address the same issue, estimating and correcting for carrier frequency offsets in wireless systems. It would have also been obvious to

one of ordinary skill in the art to modify the combination of '361 and '289 with the teaching of Chung et al. since '361 implements the invention as an integrated circuit to achieve small and compact design which complements Chung et al.'s implementation in mobile phones. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the combination of '361, '289, and Chung et al. with the teaching of Powell, II et al. since both Chung et al. and Powell, II et al. teach the use of a DSP with memory to estimate and detect frequency offsets and would have logically commended itself to the attention of one of ordinary skill in the art in considering this problem.

Regarding **claim 7**, in the combination applied to *claim 6* above, '361 further discloses wherein the main-cursor signal is determined using peak-detection (column 8, lines 36-42).

Regarding **claim 8**, in the combination applied to *claim 6* above, '361 further discloses wherein the predefined formula includes multiplying a phase of the first result (phase angle difference, column 7, lines 25-32) by the sign of a real part of the first result (the direction flag is determined based on comparing the maximum (amplitude) outputs of a matched filter applying a pilot spreading code to a received signal; the output with the largest amplitude is compared with matched results immediately before and after to determine the phase offset direction, column 5, lines 25-45, and column 6, 37 lines 37-52; in the correction of fractional part of carrier frequency the direction flag is used to decide the calculation way of the phase angle difference; direction flag of –1 is a phase shift between 0 and –360 degrees (negative), and a flag of 1 is a phase shift between 0 and 360 degrees (positive)).

Regarding **claim 9**, in the combination applied to *claim 6* above, '361 further discloses wherein the main-cursor signal is a BPSK signal (column 8, lines 31-32).

Regarding claim 10, the combination applied to *claim 6* above fails to expressly disclose the device further comprising a keyboard and LCD.

Powell, II et al. disclose display 824 and user controls 820.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the combination of '361, '289, Chung et al., and Powell, II et al. with an LCD display and keypad user controls since the choice of such elements are an engineering expedient and provide a familiar user-friendly interface in a mobile phone.

Regarding **claim 11**, in the combination applied to *claim 6* above, '361 further discloses wherein the communications system is a DSSS wireless communications system (column 2, lines 45-48).

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Huang whose telephone number is (571) 270-1798. The examiner can normally be reached on Monday - Friday, 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSH/dsh
1/2/2008

SHUWANG LIU
SUPERVISORY PATENT EXAMINER